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A Note on Using C-Compiler Package M3T-NC30WA --On Using switch Statements--

Please take note of the following problem in using the M3T-NC30WA C-compiler package which is used for the M16C/60, M16C/30, M16C/20, M16C/10, M16C/Tiny, and R8C/Tiny series of MCUs:

- On using switch statements
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1. Versions Concerned

M3T-NC30WA V.1.00 Release 1 through V.5.00 Release 1, and
V.5.10 Release 1 through V.5.30 Release 1

2. Description

If the controlling expression in a switch statement is of type signed char, code of jumps to correct case labels may not be generated.

2.1 Conditions

This problem occurs if the following conditions are all satisfied:

- (1) The controlling expression in a switch statement is of type signed char.
- (2) The maximum and minimum values of case labels are different in signs.
- (3) Twelve or more case labels exist in the switch statement in (1).
- (4) After compilation, an address table of jump destinations and indirect jumps using this table are generated in assembly-language code.

2.2 Examples

C-language source code:

```
-----  
signed char sc;  
void func(void)  
{  
    switch (sc) {  
        case -8:  
            .....  
        case 1:  
            .....  
    }  
}
```

Assembly-language code generated by the above source file:

```
-----  
    mov.b  _sc:R0L  
    mov.b  R0L,A0  
    sub.b  #0f8H,A0  
    cmp.b  #11H,A0  
    jnc   M1  
    mov.w  #10H,A0  
M1:  
    sha.w  #1,A0  
S1:  
    jmp.w  L35[A0]  
L35:  
    .word  L19-S1&0ffffH  
    .word  L21-S1&0ffffH  
    .word  L23-S1&0ffffH  
    .word  L25-S1&0ffffH  
    .....  
-----
```

3. Workaround

Convert the controlling expression of type signed char in a switch statement to that of type signed int using the cast operator.

Example:

```
-----  
signed char sc;  
void func(void)  
{
```

```
switch((signed int)sc) {  
case 0:
```

```
.....
```

```
-----
```

4. **Schedule of Fixing the Problem**

This problem has already been fixed in the M3T-NC30WA V.5.30 Release 02 and later.

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